

GAO

Report to the Subcommittees on  
Homeland Security, House and Senate  
Committees on Appropriations

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June 2007

# COAST GUARD

## Challenges Affecting Deepwater Asset Deployment and Management and Efforts to Address Them



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# Highlights

Highlights of [GAO-07-874](#), a report to Subcommittees on Homeland Security, House and Senate Committees on Appropriations

## Why GAO Did This Study

The U.S. Coast Guard's Deepwater program was designed to replace aging vessels and aircraft and information capabilities with new and upgraded assets and equipment. GAO's prior work raised concerns about the Coast Guard's efforts to upgrade or acquire assets on schedule and manage the Deepwater prime contractor.

This report responds to congressional direction contained in a conference report accompanying the Department of Homeland Security (DHS) fiscal year 2007 appropriations bill. GAO addressed two objectives: (1) What is the status of key Deepwater assets and how is the Coast Guard addressing any asset-related challenges that have been encountered? (2) What is the status of the Coast Guard's overall management of the Deepwater contract?

GAO's work is based on reports, memorandums, and data on the plans and management of the Deepwater program and interviews with key officials. GAO is not making any new recommendations. DHS and the Coast Guard reviewed a draft of this report and concurred with our findings. Their formal comments appear in appendix IV.

[www.gao.gov/cgi-bin/getrpt?GAO-07-874](http://www.gao.gov/cgi-bin/getrpt?GAO-07-874).

To view the full product, including the scope and methodology, click on the link above. For more information, contact Stephen L. Caldwell at (202) 512-9610 or [caldwells@gao.gov](mailto:caldwells@gao.gov); or John P. Hutton at (202) 512-7773 or [huttonj@gao.gov](mailto:huttonj@gao.gov).

## COAST GUARD

# Challenges Affecting Deepwater Asset Deployment and Management and Efforts to Address Them

## What GAO Found

Five years into the Deepwater contract, some assets have been delivered and are undergoing planned improvements or initial testing, but several other assets have encountered significant problems. For example, engine upgrades to the HH-65 helicopters are well under way; and the first two Maritime Patrol Aircraft and the first eight Short Range Prosecutor cutter-based small patrol boats have been delivered according to schedule. In contrast, other Deepwater assets have experienced problems, which have created a number of challenges for the Coast Guard in terms of delivery delays and loss of operational capabilities. For example, the Vertical Takeoff and Landing Unmanned Aerial Vehicle has experienced delays as the Coast Guard assesses alternatives; the Fast Response Cutter, which was to replace the Coast Guard's legacy patrol boat fleet, experienced design problems and the Coast Guard suspended all work, and the first two hulls of the National Security Cutter have structural design issues that, if not corrected, will reduce the fatigue lives of these vessels. To address these and other challenges, the Coast Guard is taking a variety of actions, such as relying more heavily on legacy assets to help address patrol hour shortages, making plans to purchase off-the-shelf assets to expedite delivery, and planning corrective structural modifications.

Over the past several years, GAO has expressed concerns about the Coast Guard's ability to manage and oversee the Deepwater program. Specifically, the program has faced challenges in terms of management, contractor accountability, and cost control. While the Coast Guard has taken actions since 2004 in response to these concerns, challenges remain. As a result, the Coast Guard recently decided to become more directly involved in program management and has chosen to (1) take over the leadership of the integrated product teams—a key program management tool; (2) acquire certain Deepwater assets outside of the existing Deepwater contract; (3) use independent, third-party reviews for asset development; and (4) reorganize the Deepwater acquisition functions within the Coast Guard organization. Given the Coast Guard's increased role, having sufficient staff with the requisite skills and abilities to execute new and expanding responsibilities will be important to getting what is needed, on time, and at a fair price.

### Deepwater Vessel and Aircraft Classes

National Security Cutter (NSC)	Offshore Patrol Cutter (OPC)	Fast Response Cutter (FRC)	Short-Range Prosecutor (SRP)	Long-Range Interceptor (LRI)
HH-65 Multi-Mission Cutter Helicopter (MCH)	HH-60 Medium-Range Recovery Helicopter (MRR)	Maritime Patrol Aircraft (MPA)	Vertical Takeoff and Landing Unmanned Aerial Vehicle (VUAV)	Long-Range Surveillance Aircraft (LRS)

Source: Photos used by permission of the U.S. Coast Guard.

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## Abbreviations

DHS	Department of Homeland Security
FRC	Fast Response Cutter
GAO	Government Accountability Office
ICGS	Integrated Coast Guard Systems
IPT	Integrated product team
LRI	Long-Range Interceptor
LRS	Long-Range Surveillance Aircraft
MCH	Multi-Mission Cutter Helicopter
MPA	Maritime Patrol Aircraft
MRR	Medium-Range Recovery Helicopter
NSC	National Security Cutter
OPC	Offshore Patrol Cutter
SRP	Short-Range Prosecutor
TOC	Total ownership cost
VUAV	Vertical Takeoff and Landing Unmanned Aerial Vehicle

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United States Government Accountability Office  
Washington, DC 20548

June 18, 2007

The Honorable David E. Price, Chair  
Subcommittee on Homeland Security  
House Committee on Appropriations

The Honorable Harold Rogers, Ranking Member  
Subcommittee on Homeland Security  
House Committee on Appropriations

The Honorable Robert C. Byrd, Chair  
Subcommittee on Homeland Security  
Senate Committee on Appropriations

The Honorable Thad Cochran, Ranking Member  
Subcommittee on Homeland Security  
Senate Committee on Appropriations

The Coast Guard is in the midst of the largest acquisition program in its history—one that has experienced serious performance and management problems. The Deepwater program is a 25-year, \$24 billion plan to replace or modernize the Coast Guard's fleet of vessels and aircraft (assets), and information management capabilities. The Coast Guard chose a lead system integrator to manage a "system-of-systems" approach intended to integrate the delivery of assets, sensors, and communications links to accomplish missions more effectively. Now in the final year of its first 5-year Deepwater contract period, the Coast Guard is currently negotiating contract modifications for the next performance period with the system integrator, Integrated Coast Guard Systems (ICGS). These negotiations are to be completed by June 25, 2007. Our work reflects the status of the program before such negotiations were finalized.

Since the Deepwater program's inception, we have expressed concerns that the system-of-systems acquisition strategy was risky for a project of this magnitude within the Coast Guard. In particular, our work raised concerns about the Coast Guard's efforts to upgrade or acquire Deepwater assets on schedule, and manage and effectively monitor the lead system integrator, and we made several recommendations to the Coast Guard to address these concerns. More recently, the Coast Guard announced a number of changes that are aimed at addressing these recommendations and other related program concerns. In addition, the Coast Guard has

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begun to take actions to hold the system integrator accountable for problems that have arisen with the design and construction of certain Deepwater assets that will affect the lead system integrator's roles and responsibilities in executing the program moving forward.

On May 15 and May 17, 2007, in response to congressional direction contained in a conference report accompanying the Department of Homeland Security's Fiscal Year 2007 Appropriations bill,<sup>1</sup> we briefed your committees on two key objectives:

- (1) What is the status of key Deepwater assets and how is the Coast Guard addressing any asset-related challenges that have been encountered?
- (2) What is the status of the Coast Guard's overall management of the Deepwater contract?

The content of our briefing, which provided examples of selected Deepwater vessels and aircraft that illustrate progress made with certain assets, as well as particular operational or management challenges, is contained in appendix I. Details on the status of all 10 Deepwater asset classes are contained in appendix II. Information on the status of prior GAO recommendations related to this work is in appendix III. In addition, a list of related GAO products is provided at the end of the report.

In conducting our work, we analyzed reports, memorandums, and data on the Coast Guard's plans and management of the Deepwater program; obtained information from multiple sources, including the Department of Homeland Security (DHS); U.S. Coast Guard; Coast Guard Deepwater System Integration Program Office; the Deepwater system integrator and its subcontractors; and private engineering firms. We also interviewed officials responsible for management of the Deepwater program during site visits to Coast Guard headquarters, Coast Guard Deepwater Program Office, Deepwater System Integration Program Office, Coast Guard Aircraft and Supply Center, and Coast Guard Atlantic and Pacific Area Commands and their associated Maintenance and Logistics Commands.

To assess the reliability of the data obtained from the Coast Guard and from ICGS—including but not limited to cost, schedule, and staffing

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<sup>1</sup>H.R. Conf. Rep. No. 109-699 (2006), incorporating GAO reporting provisions contained in H.R. Rep. No. 109-476 (2006).

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data—we analyzed the data for errors in accuracy and completeness and interviewed agency officials knowledgeable about these data. We determined that the data were sufficiently reliable for the purposes of this report. Our work was conducted between July 2006 and May 2007 in accordance with generally accepted government auditing standards.

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## Summary

Five years into the Deepwater contract, some assets have been delivered<sup>2</sup> and are undergoing planned improvements or initial testing, but several other assets have encountered significant problems. For example, engine upgrades to the HH-65 helicopters are well underway, the first two Maritime Patrol Aircraft have been delivered, and eight Short-Range Prosecutor cutter-based small patrol boats have been delivered according to schedule. In contrast, other Deepwater assets have experienced problems, which have created a number of challenges for the Coast Guard in terms of delivery delays and loss of operational capabilities. The Vertical Takeoff and Landing Unmanned Aerial Vehicle (VUAV) has experienced delays as the Coast Guard assesses alternatives; the 123-foot patrol boats experienced structural problems and were eventually removed from service; and the Fast Response Cutter (FRC), which was to replace the Coast Guard's legacy patrol boat fleet, experienced design problems and the Coast Guard suspended all work. Further, the National Security Cutter (NSC) has structural problems with the first two hulls that, if not corrected, will reduce the fatigue lives of these vessels. To address these and other challenges, the Coast Guard is taking a variety of actions, such as relying more heavily on legacy assets to help address patrol hour shortages, making plans to purchase off-the-shelf assets to expedite delivery, and planning corrective structural modifications.

Over the past several years, we have expressed concerns and made recommendations regarding the Coast Guard's ability to manage and oversee the Deepwater program. Our concerns have centered on three main areas:

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<sup>2</sup>For purposes of this report, we are using the term "delivery" to refer to the date when the Coast Guard takes possession of the asset from the contractor. This does not correspond to the date the asset is operational, because the asset will generally still require further evaluation and testing before it is deployed.



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- Program management: The Coast Guard had not effectively implemented key components (e.g., integrated product teams)<sup>3</sup> needed to manage the program and oversee the system integrator.
  - Contractor accountability: The Coast Guard had not effectively measured contractor performance against Deepwater program goals.
  - Cost control: Control of future costs through competition remained a risk because of weak oversight of subcontractor decisions related to competition.

These concerns were exacerbated by staffing shortfalls and poor communication and collaboration between Deepwater and contractor personnel. Since 2004, the Coast Guard has taken some actions in response to these concerns and recommendations. However, challenges, such as inadequate staffing levels and undefined roles between the Coast Guard and contractor regarding maintenance and logistics support, remain. The Coast Guard recently decided to become more involved in program management. It plans to assume the lead role as system integrator while continuing to use the prime contractor to perform certain functions. Furthermore, it has decided to take other steps, including (1) changing the leadership and decision-making authority of integrated product teams, (2) using third parties to independently review asset development and major modifications, (3) reaffirming the role of the Coast Guard's chief engineer as the technical authority for all acquisition projects, and (4) reorganizing Deepwater program acquisition functions within the Coast Guard organization to ensure sufficient staff with the requisite acquisition skills and abilities are in place.

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## Concluding Observations

While there has been progress with the design, acquisition, and delivery of some Deepwater assets, problems with other assets raise questions about the Coast Guard's ability to maintain an approach that fully integrates and synchronizes the retirement of legacy assets with the introduction of new assets. As problems are encountered and asset delivery schedules slip, the overall operational capabilities of new Deepwater assets and the system as a whole could be reduced, particularly in the shortterm.

The proactive program management actions the Coast Guard recently announced could help get the Deepwater program on track. However,

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<sup>3</sup>Integrated product teams are composed of members representing the Coast Guard, the contractor, and subcontractors.

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how the planned actions are implemented is important. Further, while the Coast Guard plans to assume more direct responsibility for Deepwater management, until it has sufficient staff with the requisite skills and abilities to execute new and expanding responsibilities, the Deepwater program will remain at risk in terms of getting what is needed, on time, and at a fair price.

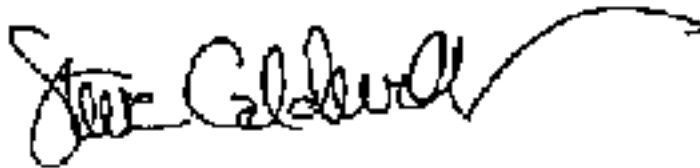
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## Agency Comments

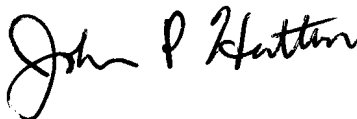
We requested comments on a draft of this report from the Department of Homeland Security and the U.S. Coast Guard. The department referred the draft to the U.S. Coast Guard, which concurred with our findings. The agency's formal comments appear in appendix IV.

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If you or your staff have any questions concerning this report, please contact Stephen L. Caldwell at (202) 512-9610 or by e-mail at [caldwells@gao.gov](mailto:caldwells@gao.gov); or John P. Hutton at (202) 512-7773 or by e-mail at [huttonj@gao.gov](mailto:huttonj@gao.gov). Key contributors to this report were Penny Augustine, Amy Bernstein, Virginia Chanley, Christopher Conrad, Adam Couvillion, Kathryn Edelman, Geoffrey Hamilton, Melissa Jaynes, Crystal Jones, Raffaele Roffo, Sylvia Schatz, and Jonathan R. Tumin.



Stephen L. Caldwell, Director  
Homeland Security and Justice



John P. Hutton, Director  
Acquisition and Sourcing Management

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# Appendix I: Briefing Slides



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## **COAST GUARD: Challenges Affecting Deepwater Asset Deployment and Management and Efforts to Address Them**

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**GAO briefing provided to the  
Subcommittees on Homeland Security  
of the  
House and Senate Committees on Appropriation**

**May 2007**

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## BRIEFING OVERVIEW

- Introduction
- Objectives, Scope, and Methodology
- Results in Brief
- Status of Deepwater Assets
- Deepwater Management Structure and Organization
  - Program Management
  - Contractor Accountability
  - Cost Control
- Concluding Observations
- Enclosure I: Quick Look Information on Key Deepwater Assets<sup>a</sup>
- Enclosure II: Status of GAO Recommendations to Coast Guard

<sup>a</sup> Note: Enclosure I is appendix II in this product. Enclosure II is appendix III in this product. This note was not in the mid-May 2007 briefing provided to congressional requesters.



## INTRODUCTION

### Deepwater Program Overview

- The Coast Guard Deepwater Program is a 25-year, \$24 billion plan to replace or modernize its fleet of vessels, aircraft, and information management capabilities.
- Rather than use a traditional acquisition approach to replace classes of vessels or aircraft, the Coast Guard chose a lead system integrator to manage the acquisition process, including identifying assets and selecting subcontractors to design, build, and integrate the assets and information management capabilities. The Coast Guard adopted this approach at that time because it did not believe it had the technical expertise or resources to be a systems integrator.
- This “system-of-systems” approach was intended to create a system that integrates common sensors and communication links on vessels and aircraft to accomplish missions more effectively.



## INTRODUCTION

### Deepwater Program Overview (cont.)

- After the terrorist attacks of September 11, 2001, the Coast Guard began taking on additional homeland security missions, and so it revised the Deepwater implementation plan to provide a mix of assets that could better meet these new responsibilities.
- Deepwater is to include acquisition of 10 new or upgraded classes of assets—5 major classes each of vessels and aircraft (see tables 1 and 2).
- The Deepwater program also consists of 5 other projects, including new or upgraded Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance systems.<sup>1</sup>

<sup>1</sup>Based on an agreement with the committees' staff, our work focused on the 10 classes of vessels and aircraft within the Deepwater program.



# INTRODUCTION

## Deepwater Vessels to be Acquired

Table 1

	National Security Cutter (NSC)	Offshore Patrol Cutter (OPC)	Fast Response Cutter (FRC)	Short-Range Prosecutor (SRP)	Long-Range Interceptor (LRI)
Current number of assets planned	8	25	58	91	33
Asset being replaced	378-foot high-endurance cutters	210-foot and 270-foot medium-endurance cutters	110-foot and 123-foot patrol boats	Cutter-based patrol boats	Cutter-based patrol boats
Missions	<ul style="list-style-type: none"> <li>• Maritime safety</li> <li>• Maritime security</li> <li>• Protection of natural resources</li> <li>• National defense</li> </ul>	<ul style="list-style-type: none"> <li>• Maritime safety</li> <li>• Maritime security</li> <li>• Protection of natural resources</li> <li>• National defense</li> </ul>	<ul style="list-style-type: none"> <li>• Maritime safety</li> <li>• Maritime security</li> <li>• Protection of natural resources</li> <li>• National defense</li> </ul>	<ul style="list-style-type: none"> <li>• Maritime safety</li> <li>• Maritime security</li> <li>• Protection of natural resources</li> <li>• National defense</li> </ul>	<ul style="list-style-type: none"> <li>• Maritime safety</li> <li>• Maritime security</li> <li>• Protection of natural resources</li> <li>• National defense</li> </ul>






Source: Photos used by permission of the U.S. Coast Guard.



# INTRODUCTION

## Deepwater Aircraft to be Upgraded or Acquired

Table 2

	HH-65 Multi-Mission Cutter Helicopter (MCH)	HH-60 Medium Range Recovery Helicopter (MRR)	Maritime Patrol Aircraft (MPA)	Vertical Takeoff and Landing Aerial Vehicle (VUAV)	Long-Range Surveillance Aircraft (LRS)
					
<b>Current number of assets planned</b>	102	42	36	45	22
<b>Asset being replaced</b>	Upgraded asset (HH-65)	Upgraded asset (HH-60)	HU-25 Falcon	New asset	Upgraded asset (HC-130)
<b>Missions</b>	<ul style="list-style-type: none"> <li>• Maritime safety</li> <li>• Maritime security</li> <li>• Protection of natural resources</li> <li>• National defense</li> </ul>	<ul style="list-style-type: none"> <li>• Maritime safety</li> <li>• Maritime security</li> <li>• Protection of natural resources</li> <li>• National defense</li> </ul>	<ul style="list-style-type: none"> <li>• Maritime safety</li> <li>• Maritime security</li> <li>• Protection of natural resources</li> </ul>	<ul style="list-style-type: none"> <li>• Maritime safety</li> <li>• Maritime security</li> <li>• Protection of natural resources</li> <li>• National defense</li> </ul>	<ul style="list-style-type: none"> <li>• Maritime safety</li> <li>• Maritime security</li> <li>• Protection of natural resources</li> <li>• National defense</li> </ul>

Source: Photos used by permission of the U.S. Coast Guard.





## INTRODUCTION

### GAO's Prior and Current Deepwater Work

- GAO's prior work raised concerns about Coast Guard's efforts to upgrade or acquire Deepwater assets on schedule, and manage and effectively monitor the system integrator.<sup>2</sup>
- This briefing responds to congressional direction contained in a conference report accompanying the Department of Homeland Security's Fiscal Year 2007 Appropriations bill.<sup>3</sup>

<sup>2</sup> GAO, *Contract Management: Coast Guard's Deepwater Program Needs Increased Attention to Management and Contractor Oversight*, GAO-04-380 (Washington, D.C.: Mar. 9, 2004); *Coast Guard: Deepwater Program Acquisition Schedule Update Needed*, GAO-04-695 (Washington, D.C.: June 2004); *Coast Guard: Status of Efforts to Improve Deepwater Program Management and Address Operational Challenges*, GAO-07-575T (Washington, D.C.: Mar. 8, 2007); *Coast Guard: Preliminary Observations on Deepwater Program Assets and Management Challenges*, GAO-07-446T (Washington, D.C.: Feb. 15, 2007).

<sup>3</sup> H.R. Conf. Rep. No. 109-699 (2006), incorporating GAO reporting provisions contained in H.R. Rep. No. 109-476 (2006).



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## **INTRODUCTION**

### **Status of the Deepwater Program**

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- While the Deepwater program is a 25-year plan, it is in the final year of the original 5-year contract period. The Coast Guard is currently negotiating contract modifications for the next performance period with the prime contractor, Integrated Coast Guard Systems (ICGS). These negotiations are to be completed by June 25, 2007.
- The Deepwater program has experienced performance and management problems, and the Coast Guard recently announced a number of changes to address these problems.



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## **OBJECTIVES, SCOPE, AND METHODOLOGY**

### **Objectives**

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This briefing addresses two key objectives:

- (1) What is the status of key Deepwater assets and how is the Coast Guard addressing any asset-related challenges that have been encountered?
- (2) What is the status of the Coast Guard's overall management of the Deepwater contract?



## OBJECTIVES, SCOPE, AND METHODOLOGY

### Scope and Methodology

- To address our objectives we:
  - analyzed reports, memorandums, and data on the plans, planning and management of the Deepwater program;
  - obtained information from multiple sources, including the Department of Homeland Security (DHS); U.S. Coast Guard; Coast Guard Deepwater System Integration Program Office; Deepwater system integrator and its subcontractors; and private engineering firms;
  - interviewed officials responsible for the management of the Deepwater program during site visits to: Coast Guard headquarters, Coast Guard Deepwater Program Office, Deepwater System Integration Program Office, Coast Guard Aircraft and Supply Center, and Coast Guard Atlantic and Pacific Area Commands and their associated Maintenance and Logistics Commands.
- This briefing provides examples of selected Deepwater vessels and aircraft that illustrate progress made with certain assets as well as particular operational or management challenges.
- Details on the status of all 10 Deepwater asset classes—including those not cited as examples—are contained in enclosure I.
- Information on the status of prior GAO recommendations related to this work is in enclosure II.
- We conducted our work between July 2006 and May 2007 in accordance with generally accepted government auditing standards.



## RESULTS IN BRIEF

### Status of Deepwater Assets—Examples of Progress and Setbacks

Five years into the Deepwater contract, some assets have been delivered,<sup>4</sup> and others are undergoing planned improvements or initial testing, but several other assets have encountered significant problems.

- Engine upgrades to the HH-65 helicopters are well under way; the first two Maritime Patrol Aircraft have been delivered; and 8 of 91 Short Range Prosecutors (SRP) have been delivered according to schedule.
- In contrast, other Deepwater assets, have experienced delays, which have created a number of challenges for the Coast Guard in terms of delivery delays and loss of operational capabilities. For example,
  - The Vertical Takeoff and Landing Unmanned Aerial Vehicle (VUAV) has experienced delays as the Coast Guard assesses alternatives.

<sup>4</sup> For purposes of this report, we are using the term "delivery" to refer to the date when the Coast Guard takes possession of the asset from the contractor. This does not correspond to the date the asset is operational, because the asset will generally still require further evaluation and testing before it is deployed.



## RESULTS IN BRIEF

### Status of Deepwater Assets—Examples of Progress and Setbacks continued

- The 123-foot patrol boats experienced structural problems and were eventually removed from service. The Fast Response Cutter (FRC), which was to replace the Coast Guard's legacy patrol boat fleet, experienced design problems and the Coast Guard suspended all work.
- The delivery date for the first FRC was advanced from 2018 to 2007, but has now slipped to 2010 at the earliest.
- The National Security Cutter (NSC) has structural problems with the first two hulls that, if not corrected, will reduce the fatigue lives of these vessels.



## RESULTS IN BRIEF

### Status of Deepwater Assets—Coast Guard Challenges and Actions

- To address these and other challenges, the Coast Guard is taking a variety of actions, such as relying more heavily on legacy assets to help address patrol hour shortages, purchasing off-the-shelf assets to expedite delivery, and planning corrective structural modifications.
- These challenges are compounded, in part, due to uncertainties with delivery dates that stem from the long-term nature of the program, on-going technological advances, funding level changes, and changes to the Coast Guard's management of the Deepwater program. These present additional challenges to the Department of Homeland Security (DHS) and Congress as they oversee the program and consider appropriate funding levels.



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## RESULTS IN BRIEF

### Coast Guard Management of Deepwater Program is Evolving

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- The Deepwater program has faced challenges in terms of program management, contractor accountability, and cost control. In some cases, these challenges have affected the acquisition and delivery of Deepwater assets. To mitigate these challenges, the Coast Guard has become more directly involved in program management. For example, the Coast Guard has decided to acquire certain Deepwater assets outside of the existing Deepwater contract. The Coast Guard also has taken over the leadership of the integrated product teams (IPT)<sup>5</sup>—a key program management tool—and has incorporated new award fee criteria to provide an incentive for better contractor performance. Further, the Coast Guard plans to use independent, third-party reviews for asset development and major modifications.

<sup>5</sup> IPTs are composed of members representing the Coast Guard, ICGS, and subcontractors.



Objective 1



## **STATUS OF DEEPWATER ASSETS**

### **Examples of Assets Making Progress**

- There has been progress in terms of design, acquisition, and delivery for some Deepwater assets, including, for example:
  - HH-65 helicopter
  - Maritime Patrol Aircraft (MPA)
  - Short-Range Prosecutor (SRP) cutter-based small patrol boats

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Objective 1



## **STATUS OF DEEPWATER ASSETS**

### **HH-65 Upgrades Proceeding as Planned**

- The current HH-65 fleet will ultimately be upgraded to a fleet of Multi-Mission Cutter Helicopters (MCHs) in three separate phases.
  - Phase 1 involves installation of new engines and engine control systems, intended to provide a 40 percent power increase.
    - According to the Coast Guard, as of April 3, 2007, 75 of the 95 HH-65s have been re-engined; an additional 9 are to be completed by June 2007, and the remainder are to be completed by October 2007.<sup>a</sup>
    - The first-in-class Multi-Mission Cutter Helicopter is currently scheduled for delivery in 2012.
  - Phase 2, a service-life extension program, runs from fiscal years 2007 through 2014.
  - Phase 3, which is to include communications upgrades, runs from fiscal years 2008 through 2014.

<sup>a</sup>Note: In its June 2007 response to the draft of this product, the Coast Guard stated that it had met these deadlines and that 84 of the HH-65s had been re-engined. This note was not in the version of the slides briefed in mid-May to congressional requesters.

Objective 1



## **STATUS OF DEEPWATER ASSETS**

### **Delivery of MPAs and SRPs Has Begun**

#### MPA

- The first two MPAs were delivered to the Coast Guard in December 2006 and February 2007, with a third scheduled to be delivered by the end of August 2007. Five more MPAs are on contract.
- Pilots and air crew have participated in training, and the first aircraft delivered to the Coast Guard is undergoing integration of the Missions System pallet at the Coast Guard's Aircraft Repair and Supply Center in Elizabeth City, N.C.

#### SRP

- The Coast Guard has procured 8 of 91 planned SRPs to date and is pursuing more cost-effective means of acquiring the remaining SRPs.

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Objective 1



## **STATUS OF DEEPWATER ASSETS**

### **Other Aircraft and Vessels Face Problems**

- Some Deepwater asset classes have experienced design or technology problems that have limited their performance or delayed production, including, for example:
  - VUAV
  - 123-foot patrol boats
  - FRC
  - NSC

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Objective 1



## **STATUS OF DEEPWATER ASSETS VUAV—Acquisition Has Been Delayed**

- Acquisition of the first-in-class VUAV, originally scheduled for delivery in 2006, has been delayed, in part, because of technological issues and the Coast Guard is reconsidering the capabilities by which to meet its aerial surveillance requirements.
  - The Eagle Eye was the original VUAV option, but there are technological challenges:
    - Some elements of the VUAV technology are unproven and the Coast Guard considers it a “developmental program.”
    - The Coast Guard does not plan to request funding for the VUAV before fiscal year 2013. The Coast Guard has stated that technological advances between now and then could affect decisions about what kind of surveillance system to acquire. Thus, the revised delivery date of 2013 for the first-in-class asset will likely be revisited.

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Objective 1



## **STATUS OF DEEPWATER ASSETS VUAV—Delays Could Affect Operational Capabilities**

- Delayed development of the VUAVs could affect operational capabilities of the NSC:
  - The first VUAV was to be delivered concurrent with the first NSC, enabling the VUAV to launch from the NSC to provide surveillance capabilities beyond the range of the NSC alone.
  - Delays to the VUAV acquisition means this asset no longer aligns with the NSC's planned deployment, thus diminishing planned operational capabilities.
- Any further delays could also affect the operational capabilities of future planned Deepwater assets, including the Offshore Patrol Cutter, from which the VUAV is also planned to launch, unless the maritime surveillance capability is provided by alternate means.

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Objective 1



## **STATUS OF DEEPWATER ASSETS VUAV—Coast Guard Actions**

- The Coast Guard is considering alternative ways to address the operational impact of delays in VUAV acquisition, to include:
  - Increasing the use of other Deepwater assets—such as the HH-65, SRP, and the Long-Range Interceptor—to expand the surveillance capabilities of its large vessels.
  - Developing a list of other potential unmanned aerial systems to launch from its large vessels.
    - The Coast Guard has directed an independent third party to compare the capabilities of Fire Scout—an alternative solution under development by the Department of Defense—with the original VUAV.

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Objective 1



## **STATUS OF DEEPWATER ASSETS**

### **123-foot Patrol Boats Removed From Service**

- The Coast Guard originally intended to convert all 49 of its 110-foot patrol boats to 123-foot patrol boats to provide additional capabilities.
- However, hull buckling and other structural problems among the 8 converted patrol boats led the Coast Guard to impose operating restrictions on the converted patrol boats in April 2005.
- In June 2005, all further conversions were halted by the Coast Guard.
- A number of the converted 123-foot patrol boats continued to experience hull and deck buckling, shaft alignment problems, and other issues affecting operational capabilities.
- Effective November 2006, all 8 of the Coast Guard's 123-foot patrol boats were removed from service due to operational and safety concerns.
- In April 2007, the Coast Guard announced that this removal from service would be permanent.
- The Coast Guard Commandant announced that he has established a group of legal, contracting, and engineering experts to examine problems encountered in this program and that he will pursue all available options for recouping any funds that may be owed to the government as a result of the loss of these boats.



Objective 1



## **STATUS OF DEEPWATER ASSETS**

### **123-foot Patrol Boats—Coast Guard Actions**

- To help mitigate the operational impacts resulting from removal of the 123-foot patrol boats from service, the Coast Guard has stated that it:
  - Implemented multi-crewing on 8 Florida-based 110-foot patrol boats with crews from the 123-foot patrol boats that had been removed from service to increase patrol hours.
    - This decreased annual personnel tempo for 110-foot crews by 18 percent, but increased the annual tempo for the 8 patrol boats by 64 percent (3,600 hours per boat per year versus 2,200 hours previously).
    - Because increasing the operational tempo of these aging 110-foot patrol boats raises some concerns about increased maintenance needs, the Coast Guard deployed additional logistics and support personnel and spare parts to Key West in an effort to reduce repair time.
  - Deployed Coast Guard vessels from other locations to assist in missions formerly performed by the 123-foot patrol boats;
  - Secured permission from the U.S. Navy to continue using three 179-foot Navy cutters on loan for an additional 5 years;
  - Is examining the purchase of four additional 87-foot patrol boats; and
  - Is examining whether to compress the schedule of maintenance and upgrades of the 110-foot patrol boats.

Objective 1



## **STATUS OF DEEPWATER ASSETS**

### **FRC—Delayed Due to Suspension of Design Work**

- The delivery of the FRCs was accelerated to offset the failed strategy of converting 110-foot patrol boats into more capable 123-foot patrol boats.
- In February 2006, design work on a composite-hulled FRC was suspended due to design risks, including excessive weight and horsepower requirements compared with standard patrol boats.
- Also in February 2006, an independent design review confirmed the design risks previously raised by Coast Guard technical experts.
- As a result of the suspension of work, delivery of the first-in-class FRC has been delayed from 2007 until 2010, at the earliest.
- Additional delays in FRC deployment could further exacerbate the patrol hour shortage brought about by the removal of the 123-foot patrol boats from service.

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Objective 1



## **STATUS OF DEEPWATER ASSETS FRC—Coast Guard Actions**

- To address FRC delays, the Coast Guard is moving ahead with a dual-path approach:
  - First, acquire a commercial “off-the-shelf” patrol boat design (FRC-B) that it can modify to meet most of the Coast Guard’s requirements.
    - The Coast Guard issued a Request for Proposals for the FRC-B design to the system integrator in November 2006.
    - On March 14, 2007, the Coast Guard terminated the FRC-B acquisition through the system integrator and reassigned it to the Coast Guard Acquisition Directorate, which will issue a Request for Proposals to acquire a high-performing patrol boat at less cost and in less time, and to ensure full and open competition.
    - The Coast Guard projects delivery of the first of 12 FRC-Bs by spring 2010.

Objective 1



## **STATUS OF DEEPWATER ASSETS FRC—Coast Guard Actions (cont.)**

- Second, acquire a redesigned FRC (FRC-A) that will meet all of the Coast Guard's requirements
  - According to the Coast Guard, design and procurement decisions for the FRC-A depend upon its eventual assessment of results from:
    - a completed third-party business case analysis of steel versus composite hulls;
    - completion of a composite patrol boat technology readiness assessment; and
    - planned future technical testing in fiscal years 2010-2011 of composite hull technology involving building and testing a 150-foot prototype vessel by DHS's Science and Technology Directorate (funding has not yet been provided, however).
  - If funded, DHS estimates that results from these tests may be available in December 2010.

Objective 1



## **STATUS OF DEEPWATER ASSETS NSC—First Hulls Have Design Deficiencies**

- The first two NSC hulls are known to have structural design deficiencies requiring retrofitting, which the Coast Guard intends to address as part of dry dock maintenance after the NSCs are delivered.
  - According to the DHS Inspector General:
    - The current NSC design will not meet its expected 30-year service life.
    - NSC design deficiencies will likely lead to increased maintenance costs and reduced service life.
    - NSC's design and performance deficiencies are the result of Coast Guard's failure to exercise its technical and management oversight authority over design and construction.

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Objective 1



## **STATUS OF DEEPWATER ASSETS NSC—Coast Guard Actions**

- The Coast Guard plans to address these challenges by:
  - Correcting the structural deficiencies of the first two NSC hulls at scheduled dry docks in order to avoid the schedule and costs risks associated with stopping the production line; and
  - Incorporating structural enhancements into the design for NSC hulls 3 through 8 and incorporating the enhancements during production.

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## Objective 1



# STATUS OF DEEPWATER ASSETS

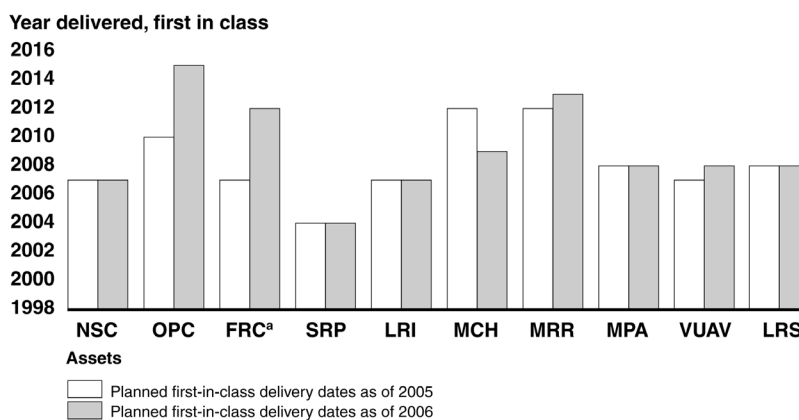
## Delivery Schedule, Summary by Key Assets

Comparing the asset delivery dates between the 2005 and 2006 Coast Guard Asset Introduction Schedules, figure 1 shows that:

- 1) Five Deepwater assets—NSC, SRP, LRI, MPA, and LRS—are on schedule (bars are same height for 2005 and 2006);
- 2) Four assets—OPC, FRC, MRR, and VUAV—are behind schedule (2006 bar is higher than for 2005); and
- 3) One asset—the MCH—is ahead of schedule (2006 bar is lower than for 2005)

**Note:** DHS is reviewing the 2006 data, so the dates shown are subject to change.

**Figure 1: Comparison of 2005 and 2006 Estimated Delivery Dates for the First-in-Class Deepwater Assets**



Source: 2005 and 2006 Coast Guard asset introduction schedule data.

<sup>a</sup> The dates shown for the FRC refer to the FRC-A, which will meet Coast Guard requirements. The Coast Guard is also pursuing procurement of a commercially available patrol boat design (FRC-B), which is anticipated sooner but will not meet all requirements.

Objective 1



## STATUS OF DEEPWATER ASSETS

### Uncertainties Over Asset Delivery Dates Add to Oversight Challenges

- In addition to the problems with assets already cited, several factors add to the uncertainty about the delivery schedule of Deepwater assets.
  - First, the Coast Guard is still in the early phases of the 25-year Deepwater acquisition program and the potential for changes in the program over such a lengthy period of time make it difficult to forecast the ability of the Coast Guard to acquire future Deepwater assets according to its published schedule.
  - Second, advances in technology for some assets are still being evaluated.
  - Third, changes to funding levels can affect the future delivery of Deepwater assets.
  - Finally, the Coast Guard has recently made a number of program management changes that could affect the delivery schedules (positively or negatively) for its Deepwater assets. Examples include the Coast Guard's decision to bring all acquisition efforts under one organization, its intent to serve as the lead Deepwater integrator, and its use of third-party reviews.
- These uncertainties in asset delivery dates present additional challenges to DHS and Congress as they oversee the Deepwater program and consider appropriate funding levels.



Objective 2



## DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION Prior GAO Findings

- The complexity of the Deepwater contract requires effective government management and oversight to ensure that the intended results are achieved and that taxpayer dollars are not wasted.
- GAO has previously reviewed the Deepwater program and made recommendations (see enclosure II) on issues specifically related to:
  - **Program management**: The Coast Guard had not effectively implemented key components needed to manage the program and oversee the system integrator including IPTs, adequate staffing, and defined maintenance and logistics roles and responsibilities.
  - **Contractor accountability**: The Coast Guard had not effectively measured contractor performance against Deepwater program goals.
  - **Cost control**: Control of future costs through competition remained a risk because of weak oversight of subcontractor decisions related to competition.

Objective 2



## **DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION**

### **Program Management—IPT Responsibilities**

#### **Integrated Product Teams**

- IPTs were designated as the Coast Guard's primary tool for managing the Deepwater program and overseeing the contractor in the program management plan.<sup>6</sup>
  - IPT responsibilities included such things as guiding development; allocating resources and budgets, measuring performance, performing product level design/performance cost trade-offs, and delivering and fielding tangible products and processes in accordance with the overall Deepwater program.

<sup>6</sup> Within Deepwater, 14 chartered IPTs are responsible for managing different groups of assets.

Objective 2



## **DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION Program Management—IPT Ineffectiveness**

- GAO previously reported that IPTs had not been effective due to changing membership, understaffing, insufficient training, lack of authority for decision making, and inadequate communication. Also, IPT decision making was to a large extent stovepiped, and some teams lacked adequate authority to make decisions within their area of responsibility.
- Our work revealed that IPTs continue to be ineffective at guiding the development and delivery of products in accordance with the overall Deepwater program. For example:
  - IPTs failed to help resolve problems with the FRC, VUAV, and NSC.
  - The Coast Guard established working groups outside the IPT structure to identify and deliver solutions to problems not resolved by the IPTs to help ensure the delivery of quality products.

Objective 2



## **DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION Program Management—IPT Ineffectiveness (cont.)**

- Some IPT's have failed to help resolve design and delivery problems on a timely basis. For example:
  - Problems identified with FRC design issues were not resolved by the IPT and subsequently the Coast Guard deactivated the IPT.
  - Poor task order scoping related to asset requirements resulted in the temporary suspension of the VUAV IPT.
  - The NSC faced program management challenges for at least 11 months, from February to December 2006. The NSC IPT staffing was inadequate to address IPT workload, including contract administration and technical issues, finalizing the engineering change proposals, and awarding the delivery task order for the third NSC on time.
- In addition, according to the DHS Inspector General:
  - The NSC IPT did not detect design deficiencies in the first two NSC hulls.
  - Coast Guard officials stated that IPTs failed to resolve NSC structural design concerns due, in part, to breakdowns in collaboration.
- The Coast Guard judged that the IPTs' performance was "non-problematic" at the same time assets were experiencing cost and schedule problems—see figures 1 and 2.

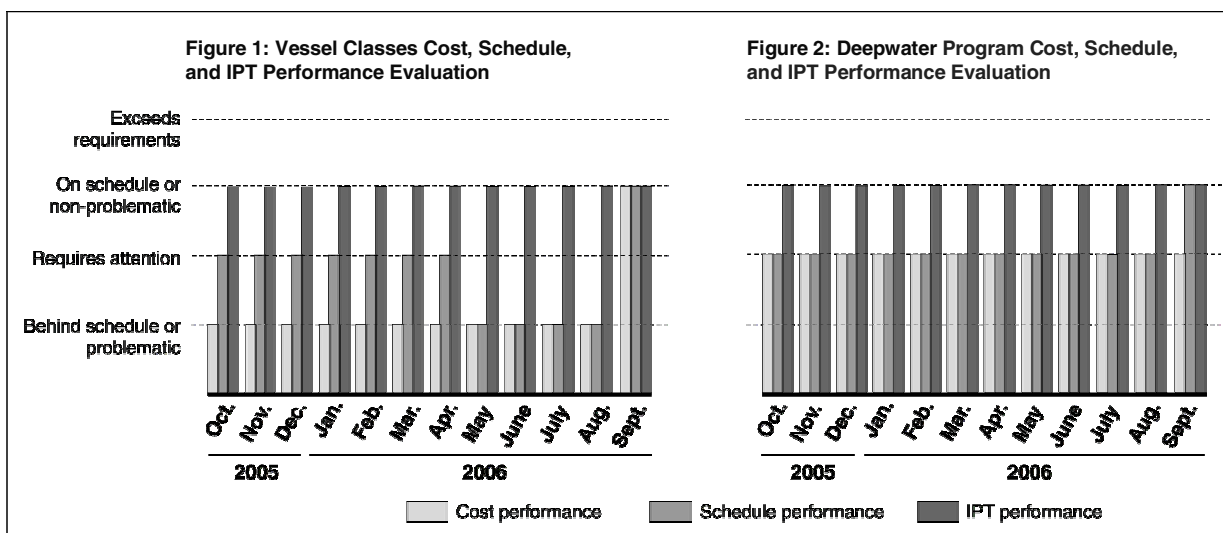
## Objective 2



## DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION

### Program Management—IPT Performance Versus Program Outcomes

Figures 1 and 2 below demonstrate the misalignment between Coast Guard's assessment of IPT performance and associated program outcomes at the asset (vessel) and, to a lesser extent, Deepwater program level.



Source: GAO analysis of Coast Guard data.

Note: The cost and schedule performance improvements in September 2006 for vessel classes were the result of rebaselining these measurements.

Objective 2



## **DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION**

### **Program Management—Coast Guard Actions**

The Coast Guard is restructuring IPTs and redefining roles and responsibilities:

- The Coast Guard has taken over the leadership of the IPTs and plans to update the IPT charters and the program management plan to reflect new roles. For example:
  - IPTs will no longer serve as the primary decision-making or problem resolution tool for asset design and development.
  - IPTs will be involved in decisions that will not affect the overall cost or schedule for the asset.
- The Coast Guard has reaffirmed the role of the Coast Guard's Chief Engineer as the technical authority for all acquisition projects. Therefore, the Coast Guard will be responsible for deciding how to resolve design issues and technical problems.
- The Coast Guard plans to obtain technical assistance from outside experts.
  - The Coast Guard also plans to direct independent, third-party design reviews for new assets as the assets are designed and as major modifications to assets are contemplated.

## Objective 2



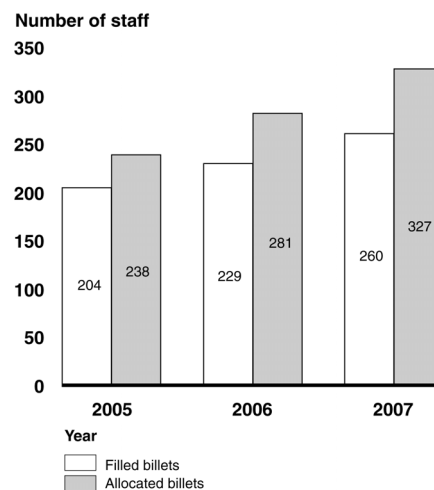
## DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION

### Program Management—Human Capital Shortages

#### HUMAN CAPITAL

- In 2004, we noted a gap between the staffing needs in the Deepwater Human Capital plan and positions filled.
  - The Coast Guard had identified a need of 264 staff for 2004, but only 224 positions were funded, and only 209 positions were assigned to the Deepwater program.
  - This staffing level fell short of the Coast Guard's goal, identified in the Human Capital Plan, of a 95 percent "fill-rate."
- For FY 2005-2007, the Deepwater program staffing information indicates a 20 percent staffing vacancy rate compared to actual billets.
- Based on independent analysis by Booz Allen Hamilton, under contract to the Coast Guard, there is a need for 371 Deepwater program management staff in fiscal 2007.

**Figure 3: Reported Coast Guard Deepwater Government Staff Levels, Fiscal Year 2005–2007, as of February 2007**



Objective 2



## **DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION**

### **Program Management—Human Capital Plan Revisions**

- The Coast Guard has acknowledged that Deepwater program personnel lack adequate systems acquisition experience.
  - Two independent studies directed and accepted by the Coast Guard—including one by the Defense Acquisition University—also identified inadequate acquisition experience within the program.
- The Coast Guard revised its Deepwater human capital plan in February 2005 to emphasize workforce planning in terms of training, leadership, knowledge management, recruiting, and retention.
  - The revised plan included annual reporting updates of key human capital management actions.
  - The majority of the objectives identified in the 2005 revised Deepwater human capital plan have not been achieved or updated annually as required.



Objective 2



## DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION

### Program Management—Coast Guard Actions

- The Coast Guard is restructuring and realigning Deepwater Human Capital. For example it has:
  - Requested 43 additional Deepwater program staff for fiscal year 2007. Subsequent to this request, the Coast Guard has decided to have increased involvement in Deepwater program management.
  - The Coast Guard announced plans for a “Blueprint for Acquisition Reform,” which more broadly addresses human capital issues in the context of acquisition reform. The Blueprint includes four sub-component plans scheduled to occur through fiscal year 2009:
    - Organizational Alignment and Leadership: Realigning acquisition functions and leadership within the Coast Guard organization;
    - Human Capital: Ensuring that the Coast Guard has the appropriate staff to accomplish the mission effectively;
    - Policies and Processes: Focusing on policies and processes to improve acquisition outcomes; and
    - Knowledge and Information Management: Identifying opportunities to reduce cost, improve service, measure compliance, and improve management of service providers.

Objective 2



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## **DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION**

### **Program Management—Maintenance and Logistics Responsibilities**

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#### Maintenance and Logistics—Roles and Responsibilities

- According to the Deepwater Program Management Plan, ICGS is responsible for developing maintenance and logistics support plans.
- In previous reports, GAO found that the Coast Guard had not adequately communicated maintenance and logistics responsibilities within the Coast Guard.
- During our current work, Coast Guard officials acknowledged the lack of clarity in defining roles and responsibilities between the Coast Guard and ICGS for maintenance and logistics support plans.
- Although ICGS is contractually responsible for developing key documents related to maintenance and logistics, the support plans for the first-in-class NSC and MPA that ICGS submitted lacked the specificity anticipated by the Coast Guard.

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Objective 2



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## **DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION**

### **Program Management—Coast Guard Actions**

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- The Coast Guard is redefining logistics and maintenance roles:
  - The Coast Guard is developing NSC and MPA interim maintenance and logistics support plans in place of the plans submitted by ICGS.
  - The Coast Guard has declared that it will have one logistics system and that the government (Coast Guard) is now the default provider of maintenance and logistics, supplemented by contractors, when necessary.

Objective 2



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## **DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION**

### **Contractor Accountability—Performance Standards and Incentives**

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- According to Office of Federal Procurement Policy guidance and Federal Acquisition Regulation 37.602 (b), a performance-based contract such as Deepwater should have measurable performance standards and incentives to motivate contractor performance.
  - Coast Guard used award fee and award term incentives with the goal of encouraging and rewarding contractor performance, including achieving the goals of maximizing operational effectiveness and minimizing total ownership cost.
  - In 2004, we reported concerns and made recommendations about how the Coast Guard held the system integrator accountable for its performance including:
    - (1) the award fee rating factors lacked objective measures, and
    - (2) not establishing a solid baseline, critical to holding the system integrator accountable, to measure progress in lowering total ownership cost.
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Objective 2



## DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION

### Contractor Accountability—Award Fee

#### Award Fee (a fee to motivate a contractor for excellent performance)

- To date, the award fee determination has not been related to asset performance.
  - Despite concerns expressed in award letters regarding cost controls and schedule performance, ICGS has received award fees ranging from 82 to 92 percent of the total it could have received.
  - Contractor earned about \$18 million (88 percent of about \$20 million available award fees) related to system integrator role.
  - Over the six performance periods, the award fee results correspond to a “very good” rating overall.
- The contractor earned an additional \$3.5 million for its Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance efforts and for leasing 8 helicopters.
- The current award fee criteria do not include measures of IPT effectiveness or competition.

Objective 2



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## **DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION**

### **Contractor Accountability—Coast Guard Actions to Address Award Fee Criteria**

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The Coast Guard revised the award fee criteria to:

- Provide an incentive for better performance
- Ensure the contractor is responsive to criteria
- Incorporate 24 specific milestones in the criteria for the next evaluation period to measure the contractor's ability to maintain schedule
- Coast Guard is considering alternative incentive structures—such as fixed fees—for the future.

Objective 2



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## **DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION**

### **Contractor Accountability—Award Term Evaluation**

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#### **Award Term** (contract performance period extension earned by a contractor for performance)

- The first award term evaluation resulted in an award to the contractor of an additional 43 of a possible 60 months.
  - The Coast Guard and ICGS are negotiating the contract modification for the first award term planned for June 25, 2007.
- The award term evaluation was subjective and based on criteria for overall program goals:
  - operational effectiveness,
  - total ownership cost, and
  - customer satisfaction (e.g., satisfaction of the personnel in the Coast Guard who are to use the Deepwater assets).

Objective 2



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## **DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION**

### **Contractor Accountability—Operational Effectiveness and Total Ownership Cost**

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- Operational effectiveness was measured using modeling.
    - The models measured planned asset capabilities and presence, not actual asset performance because most assets were not available at the time of the evaluation.
  - Total ownership cost (TOC) increased to \$304 billion from the original \$78 billion.
    - The Coast Guard attributed this increase to the addition of post 9/11 mission requirements and adjustments for inflation.
    - In evaluating TOC performance, the Coast Guard made allowances for factors beyond contractor control, such as additional mission requirements.
    - Also, the Coast Guard evaluation of TOC indicated that ICGS cost control measures did not appear to be in place.
    - While the Coast Guard had difficulty in measuring the contractor's impact on TOC, the contractor received a "good" rating.
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Objective 2



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## **DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION**

### **Contractor Accountability—Coast Guard Actions to Address Award Term Evaluation**

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The Coast Guard has revised the award term plan for evaluating contractor performance during the next award term. For example:

- More objective criteria have been added—including asset-specific Key Performance Parameters, however, they cannot be evaluated until assets are delivered.
  - The emphasis has shifted from total ownership cost to cost control.
  - Operational effectiveness will continue to be measured with the same models.
  - The effectiveness of the revised criteria cannot be evaluated until at least mid-2010.
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Objective 2



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## **DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION**

### **Cost Control—Competition Is Key for Controlling Costs**

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- Competition is a key component for controlling costs in the Deepwater program.
  - In 2004, we reported that although competition among subcontracts was a key mechanism for controlling costs, the Coast Guard had neither measured the extent of competition among the suppliers of Deepwater assets nor held ICGS accountable for taking steps to achieve competition.
    - The two first-tier subcontractors, Lockheed Martin and Northrop Grumman, had sole responsibility for determining whether to compete assets or to provide the assets themselves.
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Objective 2



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## **DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION**

### **Cost Control—Information on Competition Obtained**

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- The Coast Guard requested additional information from ICGS on competition, but in December 2006, the Coast Guard reported that ICGS data on Deepwater competition did not provide the minimum information needed to determine whether an appropriate level of competition had been achieved.
- Based on ICGS information, first-tier subcontractors have performed about half of all work in-house (see table 3).

## Objective 2



## DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION

### Cost Control—ICGS Affiliates Awarded Large Portion of Deepwater Contracts

During September 2003-December 2006, about half of the \$1.6 billion funds obligated to Lockheed Martin and Northrop Grumman (LM and NGSS) have either remained with those companies or been awarded to their affiliates. While the Coast Guard has not established a goal for in-house work, the first-tier subcontractors retained higher percentages of in-house work than we reported in 2004 (50 percent compared to 45 percent).

**Table 3: Breakdown of the Percentage of ICGS Obligations to First-Tier Subcontractors (Includes Planned Subcontracts)**

First-tier subcontractors	In-house work (including affiliates) for September 2003-December 2006	Previously reported percentage of in-house work, as of September 30, 2003 <sup>a</sup>
Lockheed Martin	42%	42%
Northrop Grumman Ship Systems	64%	51%
Lockheed Martin and Northrop Grumman Ship Systems	50%	45%

Source: GAO analysis of ICGS data

<sup>a</sup>GAO, *Contract Management: Coast Guard's Deepwater Program Needs Increased Attention to Management and Contractor Oversight*, GAO-04-380 (Washington, D.C.: Mar. 9, 2004)

Objective 2



## **DEEPWATER MANAGEMENT STRUCTURE AND ORGANIZATION**

### **Cost Control—Coast Guard Actions**

- To ensure the best value to the government, the Coast Guard is seeking competition and is acquiring some assets directly rather than through ICGS.
  - A July 2006 Coast Guard-directed business case analysis of the SRP showed a cost savings of between \$78,000 and \$108,000 per SRP if the Coast Guard were to procure the remaining 82 SRPs directly—a total program savings of about \$6.4 million to \$8.9 million.
  - On March 14, 2007, the Coast Guard terminated the FRC-B acquisition through ICGS and will issue a request for proposals to:
    - acquire a high-performing patrol boat at less cost and in less time than an ICGS-led acquisition, and
    - ensure full and open competition.
- The Coast Guard recently articulated a new strategy to conduct similar business case analyses in the future.
- The Coast Guard has included competition among the integrator's subcontractors as one of the criteria under the next award term plan.



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## **CONCLUDING OBSERVATIONS: Status of Deepwater Assets**

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- While the Coast Guard has made progress with the design, acquisition, and delivery of some Deepwater assets, ongoing problems with other assets raise questions about the execution of the Coast Guard's original approach. As a result, the ability to maintain a system-of-systems approach that is fully integrated and synchronized with the retirement of legacy assets and the introduction of new assets is at risk. As problems are encountered and schedules slip on individual aircraft or vessels, the overall operational capabilities of assets and the system as a whole could be reduced, particularly in the shortterm.



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## **CONCLUDING OBSERVATIONS:**

### **Deepwater Management Structure and Organization**

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- The Deepwater program is at a crossroads. Because of problems with program management, contractor accountability, and cost controls, the Coast Guard has decided to take on more direct responsibility for the acquisition management and support of key Deepwater assets. However, until the Coast Guard has sufficient staff with the requisite skills and abilities and the contract management tools to carry out these new and expanding responsibilities, the Deepwater program will remain at risk in terms of getting what is needed, on time, and at a fair price.

# Appendix II: Status of Deepwater Vessel and Aircraft Assets



## Quick look

- Replaces the 378-foot High-Endurance Cutter
- Total number planned: 8
- Length: 418 feet
- Maximum speed: 28 knots
- Operating range: 12,000 nautical miles
- Underway endurance: 60 days
- Days operational away from home port: 230
- Crew size: 16 officers, 97 enlisted personnel (typical); maximum crew size is 148
- Can carry and deploy small patrol boats—the over-the-horizon Long-Range Interceptor, and the Short-Range Prosecutor—as well as the Multi-Mission Cutter Helicopter and/or the Vertical Takeoff and Landing Unmanned Aerial Vehicle.
- Missions:
  - Maritime safety
  - Maritime security
  - Protection of natural resources
  - National defense

## National Security Cutter (NSC)

### Cost/schedule update (in millions)

FY 2005 projected per unit cost <sup>1</sup>	Current projected per unit cost <sup>2</sup>	Actual funding available <sup>3</sup>	Additional funding needed to complete <sup>4</sup>
\$359.4	\$431.3	\$1,519.7	\$1,930.3

	2005 Asset Introduction Schedule	2006 Asset Introduction Schedule	Current <sup>5</sup>
First asset delivery date	2007	2007	2007
Last asset delivery date	2017	2015	2015

### Performance Capability Changes in the Revised Deepwater Implementation Plans

The revised 2005 and 2006 Deepwater implementation plans called for providing communications equipment upgrades to make the equipment interoperable with other DHS entities, DOD assets, and local first responders. In addition, the communications capabilities were to include Rescue-21 assets—the Coast Guard's command and control communication infrastructure for all Coast Guard missions—including search and rescue, marine safety, and law enforcement. Other upgrades included installing equipment to detect chemical, biological, and radiological dangers; enhancing and increasing the flight deck to accommodate DOD and DHS helicopters; upgrading weapons systems; improving classified communication capabilities; and enhancing underwater detection capabilities.

### Current Status

The Commandant of the Coast Guard recently stated that internal reviews by Coast Guard engineers, as well as by independent analysts, have concluded that the NSC, as designed, will need structural reinforcement to meet its expected 30-year fatigue life. The Coast Guard is pursuing two strategies to address the structural modifications. NSC hulls #1 and #2 will both receive structural bolstering as part of depot-level maintenance (dry dock) after they are delivered. Coast Guard officials stated that this will not impact missions since the cutters should be able to operate safely for several years until the first scheduled dry dock. The Coast Guard is currently working with naval engineers and contractors to incorporate the required structural bolstering in the production of the remaining NSC hulls as they are being built.

While the Coast Guard had originally planned to rely on the system integrator for maintenance and logistics support, the Coast Guard will be taking responsibility for the development and implementation of maintenance and logistics for the NSC. The NSC will utilize a crew rotation concept, in which four crews rotate among three NSCs, once deployed, with each crew spending no more than 185 days away from home port.

<sup>1</sup>Based on projected budgeted/procurement costs divided by the projected number to be acquired in the FY 2005 Deepwater implementation plan.

<sup>2</sup>Based on projected budgeted/procurement costs divided by the projected number as of February 7, 2007.

<sup>3</sup>As of January 31, 2007.

<sup>4</sup>Based on the FY 2008 Plan Update submitted to the Congress, in conjunction with submission of the February 2007 FY 2008 President's budget request, minus the actual funding available as of January 31, 2007.

<sup>5</sup>"Current" date is as of March 2007 and derives from asset delivery dates provided by the Coast Guard to GAO outside of the Asset Introduction Schedules.



## Appendix II: Status of Deepwater Vessel and Aircraft Assets



### Quick look

- Replaces the 210-foot and 270-foot Medium-Endurance Cutters
- Total number planned: 25
- Length: 360 feet
- Maximum speed: 28 knots
- Operating range: 9,000 nautical miles
- Underway endurance: 45 days
- Crew size: 91—16 officers, 75 enlisted personnel
- Can carry and deploy multiple over-the-horizon boats including the Long-Range Interceptor and/or Short-Range Prosecutor as well as two Multi-Mission Cutter Helicopters or four Vertical Unmanned Aerial Vehicles
- Missions:
  - Maritime safety
  - Maritime security
  - Protection of natural resources
  - National defense

### Offshore Patrol Cutter (OPC)

#### Cost/schedule update (in millions)

FY 2005 projected per unit cost <sup>1</sup>	Current projected per unit cost <sup>2</sup>	Actual funding available <sup>3</sup>	Additional funding needed to complete <sup>4</sup>
\$282.2	\$323.9	\$126.0	\$7,972.0

	2005 Asset Introduction Schedule	2006 Asset Introduction Schedule	Current <sup>5</sup>
First asset delivery date	2010	2015	2014
Last asset delivery date	2027	2027	2027

**Performance Capability Changes in the Revised Deepwater Implementation Plans**  
The revised 2005 and 2006 Deepwater implementation plans called for providing communications equipment upgrades to make the equipment interoperable with other DHS entities, DOD assets, and local first responders. In addition, the communications capabilities were to include Rescue-21 assets—the Coast Guard's command and control communication infrastructure for all Coast Guard missions—including search and rescue, marine safety, and law enforcement. Other upgrades included installing equipment to detect chemical, biological, and radiological dangers; enhancing and increasing the flight deck to accommodate DOD and DHS helicopters; upgrading weapons systems; improving classified communication capabilities; and increasing the cruising speed from 22 to 28 knots.

#### Current Status

Funding changes have delayed the delivery of the first OPC from 2010 to 2015. Coast Guard officials have stated that further work on the development of the OPC is on hold. Funding was not requested for the OPC in fiscal year 2007 or fiscal year 2008. The Coast Guard is studying the possible use of the Navy's Littoral Combat Ship as an alternative for the OPC. The Coast Guard Engineering Logistics Center is conducting this analysis, to be completed in spring 2007.

<sup>1</sup>Based on projected budgeted/procurement costs divided by the projected quantity in the FY 2005 Deepwater implementation plan.

<sup>2</sup>Based on projected budgeted/procurement costs as of February 7, 2007, divided by the total quantity as of February 7, 2007.

<sup>3</sup>As of January 31, 2007.

<sup>4</sup>Based on the FY 2008 Plan Update submitted to the Congress, in conjunction with submission of the February 2007 FY 2008 President's budget request, minus the actual funding available as of January 31, 2007.

<sup>5</sup>"Current" date is as of March 2007 and derives from asset delivery dates provided by the Coast Guard to GAO outside of the Asset Introduction Schedules.



#### Quick look

- A single version of the FRC was originally intended to replace the Coast Guard's aging fleet of 110-foot patrol boats and its now out-of-service 123-foot patrol boats
- There are now two versions: (1) FRC-B, an off-the shelf, commercial patrol boat, with a traditional steel hull, is intended to fill the gap in patrol boat numbers until an entirely new boat, (2) the FRC-A, is developed and produced, possibly with a composite material hull
- Total number planned: 58 total: 12 FRC-Bs; 46 FRC-As
- Length: 140 feet
- Maximum speed: 30 knots
- Operating range: 1,200 nautical miles
- Underway endurance: 7 days
- Crew size: 20—2 officers, 18 enlisted personnel
- Carries and deploys Short-Range Prosecutor
- Missions:
  - Maritime safety
  - Maritime security
  - Protection of natural resources
  - National defense

### Fast Response Cutter (FRC)

#### Cost/schedule update (in millions)

FY 2005 projected per unit cost <sup>1</sup>	Current projected per unit cost <sup>2</sup>	Actual funding available <sup>3</sup>	Additional funding needed to complete <sup>4</sup>
\$55.6	\$56.8 (FRC-A)	\$80.8 (A)	\$2,532.2 (A)
	\$49.4 (FRC-B)	\$126.7 (B)	\$466.3 (B)

	2005 Asset Introduction Schedule	2006 Asset Introduction Schedule	Current <sup>5</sup>
First asset delivery date	2007	2012 (A) 2010 (B)	2010 (A) 2009/2010 (B)
Last asset delivery date	2027	2025 (A) 2013 (B)	2025 (A) 2012 (B)

#### Performance Capability Changes in the Revised Deepwater Implementation Plans

The revised 2005 and 2006 Deepwater implementation plans called for providing communications equipment upgrades to make the equipment interoperable with other DHS entities, DOD assets, and local first responders. In addition, the communications capabilities were to include Rescue-21 assets—the Coast Guard's command and control communication infrastructure for all its missions—including search and rescue, marine safety, and law enforcement. Other upgrades included installing equipment to detect chemical, biological, and radiological dangers; enhancing underwater detection capabilities; and increasing transit speed from 28 to 30 knots. The revised 2005 and 2006 Deepwater implementation plans introduced the use of a composite, rather than steel, hull.

#### Current Status

The Coast Guard suspended FRC design work in late February 2006 because of design risks. Currently, the Coast Guard is pursuing the purchase of design plans for 12 commercial off-the-shelf patrol boats, the FRC-B. On March 14, 2007, the Coast Guard terminated FRC-B acquisition through the system integrator and reassigned it to the Coast Guard Acquisition Directorate. Coast Guard officials stated that they expect the FRC-B to have a steel hull and plan to release a new request for proposal in May 2007. The Coast Guard expects delivery of the first FRC-B in 2010.

The FRC-A is intended to be a long-term solution that would meet all identified Coast Guard requirements. A Coast Guard decision on the design of the FRC-A will be based on further data and analysis, including a business case analysis by a private engineering firm comparing composite hulls to steel. In addition, the DHS Science and Technology Directorate is planning to conduct tests on a 150-foot prototype FRC with a composite material hull, but as of May 2007, the tests had not been funded. The tests are currently scheduled for 2010, with results analyzed by about the end of 2010. The decisions to not request funding for the FRC-A in fiscal year 2008, and to wait for the results of both studies before moving forward, will likely further delay delivery of the FRC-A. The FRC-B is supposed to mitigate this delay; however, it will not meet all USCG requirements.

<sup>1</sup>Based on projected budgeted/procurement costs divided by the number to be acquired in the FY 2005 Deepwater implementation plan.

<sup>2</sup>Based on projected total budgeted/procurement costs for the 2 different versions, FRC-A and the FRC-B, divided by total for each (12 FRC-Bs; 46 FRC-As) as of February 7, 2007.

<sup>3</sup>As of January 31, 2007.

<sup>4</sup>Dollar amount needed to complete total planned acquisition, based on the FY 2008 Plan Update submitted to the Congress, in conjunction with submission of the February 2007 FY 2008 President's budget request, minus the actual funding available as of January 31, 2007.

<sup>5</sup>"Current" date is as of March 2007 and derives from asset delivery dates provided by the Coast Guard to GAO outside of the Asset Introduction Schedules.



#### Quick look

- New asset. The SRP is a rigid-hull inflatable small boat intended to be deployed by the larger Deepwater cutters—the FRC, NSC, and the OPC. The FRC can deploy one SRP, while the NSC and the OPC will be able to carry either two SRPs, or one SRP and one of the larger Long Range Interceptor small boats.
- Total number planned: 91
- Length: 25 feet
- Maximum speed: 32 knots
- Operating range: 200 nautical miles
- Underway endurance: 4 hours
- Missions:
  - Maritime safety
  - Maritime security
  - Protection of natural resources
  - National defense

### Short-Range Prosecutor (SRP)

#### Cost/schedule update (in millions)

FY 2005 projected per unit cost <sup>1</sup>	Current projected per unit cost <sup>2</sup>	Actual funding available <sup>3</sup>	Additional funding needed to complete <sup>4</sup>
\$0.5	\$0.6	\$6.0	\$48.0

	2005 Asset Introduction Schedule	2006 Asset Introduction Schedule	Current <sup>5</sup>
First asset delivery date	2004 <sup>6</sup>	2004	2004
Last asset delivery date	2027	2027	2024

#### Performance capability changes in the Revised Deepwater implementation Plans

The revised 2005 and 2006 Deepwater implementation plans called for providing communications equipment upgrades to make the equipment interoperable with other DHS entities, DOD assets, and local first responders. In addition, the communications capabilities were to include Rescue-21 assets—the Coast Guard's command and control communication infrastructure for all Coast Guard missions—including search and rescue, marine safety, and law enforcement. In addition, the number of planned SRPs increased from 82 in the original 2002 Deepwater implementation Plan to 91 in the revised 2005 and 2006 Deepwater implementation plans.

#### Current status

There are no known delays at this time. According to the Coast Guard, the system integrator has provided 8 SRPs to date. The Coast Guard conducted a business case analysis in July 2006 that showed the Coast Guard could achieve a cost savings of between \$78,000 and \$108,000 per asset, or a total cost savings between \$6.4 million and \$8.9 million for the remaining 83 SRPs by procuring them directly, and not using the system integrator. The Coast Guard is currently planning to pursue construction and delivery of the remaining SRPs via a separate contractual arrangement outside of the system integrator framework.

<sup>1</sup>Based on projected budgeted/procurement costs divided by the projected number to be acquired in the FY 2005 Deepwater implementation plans.

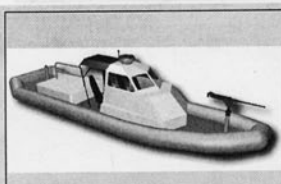
<sup>2</sup>Based on projected budgeted/procurement costs as of February 7, 2007, divided by the total quantity as of February 7, 2007.

<sup>3</sup>As of January 31, 2007.

<sup>4</sup>Based on the FY 2008 Plan Update submitted to the Congress, in conjunction with submission of the February 2007 FY 2008 President's budget request, minus the actual funding available as of January 31, 2007.

<sup>5</sup>"Current" date is as of March 2007 and derives from asset delivery dates provided by the Coast Guard to GAO outside of the Asset Introduction Schedules.

<sup>6</sup>The 2006 Asset Introduction Schedule begins at 2007, and the first SRPs were delivered in 2004 to match delivery of the 123-foot patrol boats, upon which the SRP was to operate.



#### Quick look

- New asset. The LRI is a rigid-hull inflatable small boat being introduced for deployment from two much larger Deepwater cutters, the National Security Cutter and the Offshore Patrol Cutter.
- Total number planned: 33
- Length: 35 feet
- Maximum speed: 45 knots
- Operating range: 400 nautical miles
- Underway endurance: 10 hours
- Missions:
  - Maritime safety
  - Maritime security
  - Protection of natural resources
  - National defense

### Long-Range Interceptor (LRI)

#### Cost/schedule update (in millions)

FY 2005 projected per unit cost <sup>1</sup>	Current projected per unit cost <sup>2</sup>	Actual funding available <sup>3</sup>	Additional funding needed to complete <sup>4</sup>
\$1.0	\$1.7	\$3.2	\$52.8

	2005 Asset Introduction Schedule	2006 Asset Introduction Schedule	Current <sup>5</sup>
First asset delivery date	2007	2007	2007
Last asset delivery date	2027	2027	2024

**Performance Capability Changes in the Revised Deepwater Implementation Plans**  
The revised 2005 and 2006 Deepwater implementation plans called for providing communications equipment upgrades to make the equipment interoperable with other DHS entities, DOD assets, and local first responders. In addition, the communications capabilities were to include Rescue-21 assets—the Coast Guard's command and control communication infrastructure for all Coast Guard missions—including search and rescue, marine safety, and law enforcement. Further, the number of planned LRIs was reduced from 42 in the original 2002 Deepwater implementation plan to 33 in the revised 2005 and 2006 Deepwater implementation plans.

#### Current Status

The Coast Guard has one LRI under contract for delivery in August 2007, to match delivery of the first NSC. The LRI is currently undergoing acceptance trials by the contractor to determine performance characteristics.

<sup>1</sup>Based on projected budgeted/procurement costs divided by the projected quantity in the FY 2005 Deepwater implementation plan.

<sup>2</sup>Based on projected budgeted/procurement costs as of February 7, 2007, divided by the total quantity as of February 7, 2007.

<sup>3</sup>As of January 31, 2007.

<sup>4</sup>Based on the FY 2008 Plan Update submitted to the Congress, in conjunction with submission of the February 2007 FY 2008 President's budget request, minus the actual funding available as of January 31, 2007.

<sup>5</sup>"Current" date is as of March 2007 and derives from asset delivery dates provided by the Coast Guard to GAO outside of the Asset Introduction Schedules.



#### Quick look

- Upgrade of the HH-65 legacy helicopter
- Total number planned: 102
- Short-range recovery helicopter
- Maximum speed: 160 knots
- Operating range: 400 nautical miles
- Underway endurance: 4 hours
- Crew size: 3—2 officers, 1 enlisted person
- Asset may be launched from the National Security Cutter or Offshore Patrol Cutter.
- Missions:
  - Maritime safety
  - Maritime security
  - Protection of natural resources

### Multi-Mission Cutter Helicopter (MCH)

#### Cost/schedule update (in millions)

FY 2005 projected per unit cost <sup>1</sup>	Current projected per unit cost <sup>2</sup>	Actual funding available <sup>3</sup>	Additional funding needed to complete <sup>4</sup>
\$5.7	\$7.3	\$373.6	\$367.4

	2005 Asset Introduction Schedule	2006 Asset Introduction Schedule	Current <sup>5</sup>
First asset delivery date	2012	2009	2012
Last asset delivery date	2016	2014	2016

**Performance Capability Changes in the Revised Deepwater Implementation Plans**  
The revised 2005 and 2006 Deepwater implementation plans called for providing communications equipment upgrades to make the equipment interoperable with other DHS entities, DOD assets, and local first responders. In addition, the communications capabilities were to include Rescue-21 assets—the Coast Guard's command and control communication infrastructure for all Coast Guard missions—including search and rescue, marine safety, and law enforcement. Other upgrades included installing equipment to detect chemical, biological, and radiological danger; and equipment for enhancing maritime patrol surveillance capabilities. In addition, added capabilities included airborne use of force and vertical insertion and delivery. Also, the number of planned MCHs increased from 93 in the original 2002 Deepwater implementation plan to 95 in the revised 2005 and 2006 Deepwater implementation Plans. More recently, the Coast Guard increased the number of planned MCHs by 7 to 102; these additional 7 will perform security missions in the National Capital Region.

#### Current Status

The MCH is an upgraded legacy HH-65 helicopter. According to Coast Guard officials, the MCH assets will not have a single delivery date, as the process involves three phases of upgrades. Phase I is the purchase, delivery, and installation of new engines and engine control systems, intended to provide a 40-percent power growth. Phase II is a service-life extension program, and Phase III includes communications upgrades. As of April 3, 2007, the Coast Guard stated that phase I was nearing completion, with 75 helicopters having been delivered, following installation of the new engines, and that another nine were scheduled to be delivered ahead of the published delivery date of late June 2007. The remainder were to be finished by October 2007. The fiscal year 2008 congressional justification states that Phase II began in fiscal year 2007 and will end in fiscal year 2014, and that Phase III is to begin in fiscal year 2008 and is to end in fiscal year 2014.

<sup>1</sup>Based on projected budgeted/procurement costs divided by the projected quantity in the FY 2005 Deepwater implementation plan.

<sup>2</sup>Based on projected budgeted/procurement costs divided by the projected quantity as of February 7, 2007.

<sup>3</sup>As of January 31, 2007.

<sup>4</sup>Dollar amount needed to complete total planned acquisition, based on the FY 2008 Plan Update submitted to the Congress, in conjunction with submission of the February 2007 FY 2008 President's budget request, minus the actual funding available as of January 31, 2007.

<sup>5</sup>"Current" date is as of April 2007 and derives from asset delivery dates provided by the Coast Guard to GAO outside of the Asset Introduction Schedules or from other Coast Guard information.



#### Quick look

- Upgrade of the HH-60 legacy helicopter
- Total number planned: 42
- Medium-range recovery helicopter
- Maximum speed: 170 knots
- Operating range: 600 nautical miles
- Underway endurance: 6 hours
- Crew size: 4—2 officers, 2 enlisted personnel
- Missions:
  - Maritime safety
  - Maritime security
  - Protection of natural resources

### Medium-Range Recovery Helicopter (MRR)

#### Cost/schedule update (in millions)

FY 2005 projected per unit cost <sup>1</sup>	Current projected per unit cost <sup>2</sup>	Actual funding available <sup>3</sup>	Additional Funding needed to complete <sup>4</sup>
\$10.4	\$10.7	\$100.9	\$350.1

	2005 Asset Introduction Schedule	2006 Asset Introduction Schedule	Current <sup>5</sup>
First asset delivery date	2012	2013	2008
Last asset delivery date	2016	2019	2019

#### Performance Capability Changes in the Revised Deepwater Implementation Plans

The original 2002 Deepwater implementation plan proposed retiring the HH-60 and introducing a new fleet of helicopters. However, the revised 2005 and 2006 Deepwater implementation plans included the MRR and called for providing communications equipment upgrades to make the equipment interoperable with other DHS entities, DOD assets, and local first responders. In addition, the communications capabilities were to include Rescue-21 assets—the Coast Guard's command and control communication infrastructure for all Coast Guard missions—including search and rescue, marine safety, and law enforcement. Other upgrades included installing equipment to detect chemical, biological, and radiological dangers; and equipment for enhancing maritime patrol surveillance capabilities. In addition, added capabilities included airborne use of force and vertical insertion and delivery.

#### Current Status

The MRR is an upgraded legacy HH-60 helicopter. It began receiving a series of upgrades in fiscal year 2006 and these will continue into fiscal year 2012. The upgrades include the service life extension program, radar replacement, engine sustainment, fleet replacement, and avionics enhancements. According to the Coast Guard, the MRR is a non-contract government-incurred (NCGI) project. Thus, the Coast Guard will assume primary program management responsibility for NCGI portions of the program. The Coast Guard's Aircraft Repair and Supply Center will manage the engine sustainment and service life extension projects, while the Coast Guard and ICGS will jointly manage other aspects of the program, such as the radar replacement.

<sup>1</sup>Based on projected budgeted/procurement costs divided by the projected quantity in the FY 2005 Deepwater implementation plan.

<sup>2</sup>Based on projected budgeted/procurement costs divided by the projected quantity as of February 7, 2007.

<sup>3</sup>As of January 31, 2007.

<sup>4</sup>Based on the FY 2008 Plan Update submitted to the Congress, in conjunction with submission of the February 2007 FY 2008 President's budget request, minus the actual funding available as of January 31, 2007.

<sup>5</sup>"Current" date is as of March 2007 and derives from asset delivery dates provided by the Coast Guard to GAO outside of the Asset Introduction Schedules.





#### Quick look

- Replaces the HU-25 Falcon
- Total number planned: 36
- Fixed-wing aircraft
- Maximum speed: 236 knots
- Operating range: 2,117 nautical miles
- Underway endurance: 8.7 hours
- Crew size: 5—2 officers, 3 enlisted personnel
- Missions:
  - Maritime safety
  - Maritime security
  - Protection of natural resources

### Maritime Patrol Aircraft (MPA)

#### Cost/schedule update (in millions)

FY 2005 projected per unit cost <sup>1</sup>	Current projected per unit cost <sup>2</sup>	Actual funding available <sup>3</sup>	Additional funding needed to complete <sup>4</sup>
\$44.2	\$47.4	\$399.5	\$1,306.5

	2005 Asset Introduction Schedule	2006 Asset Introduction Schedule	Current <sup>5</sup>
First asset delivery date	2008	2008	2006
Last asset delivery date	2017	2022	2022

**Performance Capability Changes in the Revised Deepwater Implementation Plans**  
The revised 2005 and 2006 Deepwater implementation plans called for providing communications equipment upgrades to make the equipment interoperable with other DHS entities, DOD assets, and local first responders. In addition, the communications capabilities were to include Rescue-21 assets—the Coast Guard's command and control communication infrastructure for all Coast Guard missions—including search and rescue, marine safety, and law enforcement. Additional upgrades include installing equipment to detect chemical, biological, and radiological dangers; and for enhancing maritime patrol surveillance capabilities. In addition, the number of planned MPAs increased from 35 in the original 2002 Deepwater implementation plan to 36 in the revised 2005 and 2006 Deepwater implementation plans.

#### Current Status

The MPA is a commercial aircraft produced in Spain that is being upgraded with equipment intended to permit the Coast Guard to carry out its missions. The first MPA was delivered to the Coast Guard in December 2006, the second was delivered in February 2007, and a third is due in August 2007. Five more are on contract. Pilots and aircrew participated in training classes in Spain, and Coast Guard is to take responsibility for the development and implementation of maintenance and logistics support for the MPA.

<sup>1</sup>Based on projected budgeted/procurement costs divided by the projected quantity to be acquired in the FY 2005 Deepwater implementation plan.

<sup>2</sup>Based on projected budgeted/procurement costs divided by the projected quantities as of February 7, 2007.

<sup>3</sup>As of January 31, 2007.

<sup>4</sup>Dollar amount needed to complete total planned acquisition, based on the FY 2008 Plan Update submitted to the Congress, in conjunction with submission of the February 2007 FY 2008 President's budget request, minus the actual funding available as of January 31, 2007.

<sup>5</sup>"Current" date is as of March 2007 and derives from asset delivery dates provided by the Coast Guard to GAO outside of the Asset Introduction Schedules.



### Quick look

- New asset
- Total number planned: 45
- Shipboard-deployable vertical takeoff and landing unmanned aircraft
- Maximum speed: 211 knots
- Operating range: 100 nautical miles
- Underway endurance: 6 hours
- Used to surveil, detect, classify, and identify targets of interest beyond a cutter's visual range or sensors.
- Planned to be deployed from the National Security Cutter and Offshore Patrol Cutter.
- Missions:
  - Maritime safety
  - Maritime security
  - Protection of natural resources
  - National defense

## Vertical Takeoff and Landing Unmanned Aerial Vehicle (VUAV)

Cost/schedule update (in millions)

FY 2005 projected per unit cost <sup>1</sup>	Current projected per unit cost <sup>2</sup>	Actual funding available <sup>3</sup>	Additional funding needed to complete <sup>4</sup>
\$11.2	\$11.2	\$152.4	\$350.6

	2005 Asset Introduction Schedule	2006 Asset Introduction Schedule	Current <sup>5</sup>
First asset delivery date	2007	2008	2015
Last asset delivery date	2022	2025	2025

### Performance Capability Changes in the Revised Deepwater Implementation Plans

The revised 2005 and 2006 Deepwater implementation plans' changes for the VUAV included installing equipment for detecting chemical, biological, and radiological dangers. In addition, the number of planned number of VUAVs was reduced from 69 in the original 2002 Deepwater implementation plan to 45 in the revised 2005 and 2006 Deepwater implementation plans.

### Current Status

Changes in funding levels and evolving technological developments have delayed the delivery of the VUAV. Coast Guard officials explained that since the time of the original contract award, the DOD has progressed in developing a different unmanned aerial vehicle—the Fire Scout—that Coast Guard officials say is more closely aligned with Coast Guard needs. Coast Guard has directed an independent third party to compare the capabilities of its planned VUAV to the Fire Scout. In addition, the Coast Guard is currently reviewing potential alternative unmanned aerial systems in lieu of the VUAV. The fiscal year 2008 DHS congressional budget justification indicates that the Coast Guard does not plan to request funding for the VUAV through fiscal year 2012. The Coast Guard originally intended to match the NSC and VUAV delivery dates so that the VUAV could launch from the NSC to provide surveillance capabilities beyond the cutter's visual range or sensors. However, with the delay in the VUAV's development schedule, it no longer aligns with the NSC's initial deployment schedule. Coast Guard officials state that they now do not expect the VUAV first-in-class to be produced earlier than 2015, 8 years later than planned, and that they are examining how to address the operational impacts of having the NSC operate without the VUAV. The Coast Guard is looking at the potential use of other assets, such as the HH-65 helicopter, the MPA, the SRP, and the LRI, and possibly unmanned aerial vehicles (UAVs), to provide surveillance capabilities for the NSC.

<sup>1</sup>Based on projected budgeted/procurement costs divided by the projected quantity in the FY 2005 Deepwater implementation plan.

<sup>2</sup>Based on projected budgeted/procurement costs divided by the projected quantity as of February 7, 2007.

<sup>3</sup>As of January 31, 2007.

<sup>4</sup>Based on the FY 2008 Plan Update submitted to the Congress, in conjunction with submission of the February 2007 FY 2008 President's budget request, minus the actual funding available as of January 31, 2007.

<sup>5</sup>"Current" date is as of March 2007 and derives from asset delivery dates provided by the Coast Guard to GAO outside of the Asset Introduction Schedules.



## Appendix II: Status of Deepwater Vessel and Aircraft Assets



### Quick look

- Two versions of the LRS are planned: (1) 16 upgraded HC-130Hs, and (2) 6 HC-130Js. The latter are new aircraft intended to be acquired and then missionized to meet Coast Guard requirements.
- Total number planned: 22—16 HC-130Hs and 6 HC-130Js
- Fixed-wing aircraft
- Maximum speed: 330 knots
- Operating range:
  - HC-130Hs: 4,100 nautical miles;
  - HC-130Js: 5,500 nautical miles
- Underway endurance:
  - HC-130Hs: 14 hours;
  - HC-130Js: 21 hours
- Crew size: 7—2 officers, 5 enlisted personnel
- Missions:
  - Maritime safety
  - Maritime security
  - Protection of natural resources
  - National defense

### Long-Range Search Aircraft (LRS)

#### Cost/schedule update (in millions)

FY 2005 projected per unit cost <sup>1</sup>	Current projected per unit cost <sup>2</sup>	Actual funding available <sup>3</sup>	Additional funding needed to complete <sup>4</sup>
\$23.9 <sup>1</sup> (HC-130Hs)	\$38.1 (H)	\$68.8 (H)	\$541.2 (H)
\$0.0 (HC-130Js)	\$1.8 (J)	\$4.9 (J)	\$6.1 (J)

	2005 Asset Introduction Schedule	2006 Asset Introduction Schedule	Current <sup>5</sup>
<b>First asset delivery date<sup>6</sup></b>	2012 (H) 2008 (J)	2011 (H) 2008 (J)	2012 (H) 2006 (J) <sup>7</sup>
<b>Last asset delivery date</b>	2015 (H) 2008 (J)	2016 (H) 2008 (J)	2016 (H) 2008 (J)

#### Performance Capability Changes in the Revised Deepwater Implementation Plans

The revised 2005 and 2006 Deepwater implementation plans include converting 16 HC-130Hs already in the Coast Guard's inventory, and 6 HC-130Js, into the LRS. The latter are intended to supplement the aging fleet of HC-130Hs, according to the Coast Guard. The plans also called for providing communications equipment upgrades to make the equipment interoperable with other DHS entities, DOD assets, and local first responders. In addition, the communications capabilities were to include Rescue-21 assets—the Coast Guard's command and control communication infrastructure for all Coast Guard missions—including search and rescue, marine safety, and law enforcement. Additional upgrades included installing equipment to detect chemical, biological, and radiological dangers; and equipment for enhancing maritime patrol surveillance capabilities. Also, the revised 2005 and 2006 Deepwater implementation plans increased the LRS' ability to provide nationwide strategic airlift capabilities.

#### Current Status

The LRS is comprised of two fixed-wing aircraft classes: (1) 16 upgraded HC-130Hs and (2) 6 HC-130Js, missionized to meet Coast Guard requirements. The first aircraft entered the modification process in December 2006, and five additional aircraft are to be modified by July 2008. In fiscal year 2008, funding has been requested to upgrade the HC-130H radar and avionics, and for the HC-130J fleet introduction.

<sup>1</sup>Based on projected budgeted/procurement costs divided by the projected quantity in the FY 2005 Deepwater implementation plan.

<sup>2</sup>Based on projected budgeted/procurement costs divided by the projected quantity as of February 7, 2007.

<sup>3</sup>As of January 31, 2007.

<sup>4</sup>Dollar amount needed to complete total planned acquisition, based on the FY 2008 Plan Update submitted to the Congress, in conjunction with submission of the February 2007 FY 2008 President's budget request minus the actual funding available as of January 31, 2007.

<sup>5</sup>"Current" date is as of March 2007 and derives from asset delivery dates provided by the Coast Guard to GAO outside of the Asset Introduction Schedules.

<sup>6</sup>According to the Coast Guard, this date corresponds to the induction of the HC-130J at the Greenville, SC Lockheed Martin facility where the modifications are taking place. The Coast Guard intends to accept delivery of the first missionized HC130-J in September 2007.

# Appendix III: Status of Prior GAO Recommendations

GAO Recommendation 2004	GAO 2006 Status	GAO 2007 Status
<b>Program Management</b>		
Follow the procedures outlined in the human capital plan to ensure that adequate staffing is in place and turnover among Deepwater personnel is proactively addressed.	Implemented	
In collaboration with the system integrator, take the necessary steps to make IPTs effective including: (1) training IPT members in a timely manner, (2) chartering the sub-IPTs, (3) making improvements to the electronic information system that would result in better information sharing among IPT members who are geographically dispersed.	Partially Implemented	Partially Implemented: The Coast Guard has taken over IPT leadership and plans to update the program management plan to reflect changing roles and responsibilities between the Coast Guard and ICGS. It is too early to assess the impact of these planned changes at this time.
As Deepwater assets begin to be delivered to operational units, ensure that field operators and maintenance personnel are provided with timely information and training on how the transition will occur and how maintenance responsibilities are to be divided between system integrator and Coast Guard personnel.	Partially Implemented	Partially Implemented: The Coast Guard has announced they are reaffirming the role of the Coast Guard's chief engineer as the technical authority for all acquisition projects. In addition, the Coast Guard is now the default provider of maintenance and logistics and is responsible for ensuring that logistics products are developed, implemented, and delivered. Given these recent decisions, time is needed to evaluate the implementation.
<b>Contractor Accountability</b>		
Develop and adhere to measurable award fee criteria consistent with the Office of Federal Procurement Policy's guidance.	Implemented	
In all future award fee assessments, ensure that the input of contracting officers' technical representatives (COTR) are considered and set forth in a more rigorous manner.	Implemented	
Hold the system integrator accountable in future award fee determinations for improving the effectiveness of IPTs.	Implemented <sup>a</sup>	
Establish a TOC baseline that can be used to measure whether the Deepwater acquisition approach is providing the government with increased efficiencies compared to what it would have cost without this approach.	USCG will not Implement	Closed: Although set forth in its program management plan, the Coast Guard does not intend to establish a baseline cost for replacing the assets under a traditional approach which could be used as a comparison to the Deepwater system of systems acquisition approach.
Based on the current schedule for delivery of Deepwater assets, establish a time frame for when the models and metrics will be in place with the appropriate degree of fidelity to be able to measure the contractor's progress toward improving operational effectiveness.	Partially Implemented	Partially Implemented: Key performance parameters have been added to criteria for measuring operational effectiveness; however, the models still lack the fidelity to attribute improvements to the contractor or the Coast Guard.

**Appendix III: Status of Prior GAO  
Recommendations**

<b>GAO Recommendation 2004</b>	<b>GAO 2006 Status</b>	<b>GAO 2007 Status</b>
Establish criteria to determine when the TOC baseline should be adjusted and ensure that the reasons for any changes are documented.	Partially Implemented	Partially Implemented: DHS's oversight requirements include an annual review of the Deepwater program baseline and submission of quarterly reports. The most recent baseline update (Nov. 2006) has yet to be approved by DHS. The Coast Guard has provided DHS with quarterly program reports. Further, according to a Coast Guard official, DHS approval is pending on shifting the baseline against which the systems integrator is measured to an asset basis.
<b>Cost Control Through Competition</b>		
For subcontracts over \$5 million awarded by ICGS to Lockheed Martin and Northrop Grumman, require Lockheed Martin and Northrop Grumman to notify the Coast Guard of a decision to perform the work themselves rather than contracting it out. The documentation should include an evaluation of the alternatives considered.	Implemented	
Develop a comprehensive plan for holding the system integrator accountable for ensuring an adequate degree of competition among second-tier suppliers in future program years. This plan should include metrics to measure outcomes and consideration of how these outcomes will be taken into account in future award fee decisions.	Partially Implemented	Partially Implemented: Although the Coast Guard had requested additional information from ICGS on competition, it does not have the information to determine the level of competition achieved. Further, they have not included metrics to measure competition outcomes in the award fee decisions. In the mean time, the Coast Guard business case analyses demonstrated that ICGS did not leverage competition to deliver the best value for certain Deepwater assets. The Coast Guard plans to gain insight into competition by performing additional business case analyses and if necessary re-competing assets.

Source: [GAO-04-380](#), [GAO-06-546](#), and GAO analysis of Coast Guard data.

<sup>a</sup>IPT performance was included in the award fee criteria for the February 2005-December 2006 performance evaluation periods, but was removed from the award fee criteria for the January 2007-June 2007 performance evaluation period.

# Appendix IV: Comments from the Department of Homeland Security

U.S. Department of Homeland Security  
Washington, DC 20528

US GAO  
2007 JUN 13 PM 12:34



Homeland  
Security

June 13, 2007

Mr. Stephen L. Caldwell  
Director, Homeland Security and Justice  
U.S. Government Accountability Office  
441 G Street, NW  
Washington, DC 20548

Dear Mr. Caldwell:

RE: Draft Report GAO-07-874, Coast Guard: Challenges Affecting Deepwater Asset  
Deployment and Management and Efforts to Address Them  
(GAO Job Code 440533)

The Department of Homeland Security (DHS) appreciates the opportunity to review and comment on the draft report referenced above. While the Government Accountability Office (GAO) makes no new recommendations, we recognize that numerous challenges remain.

The Coast Guard remains grateful for all that the Government Accountability Office has done to bring attention to issues relating to the Deepwater Program's challenges and concurs with the report's findings. The Department and, in particular, the Coast Guard appreciates the commitment the GAO has made towards making the Deepwater Program successful and values the constructive and candid criticism. Coast Guard benefits from the oversight and is prudently implementing existing recommendations to ensure improvement to its acquisition program.

The Coast Guard's overarching goal is to recapitalize its aging fleet of cutters, aircraft and sensors and the actions taken by its leadership have been dedicated to that purpose. Agency officials appreciate GAO's recognition that the recapitalization must occur simultaneously with acquisition reform. The GAO's continuing interest in Deepwater has served as a catalyst for the kind of real change needed to promote sound stewardship and effective program management at all levels.

Five years into this 25-year acquisition, the Coast Guard has achieved several notable successes, but also learned some hard lessons. As a result of those lessons learned, Coast Guard is taking aggressive action every day to strengthen program management and execution and to ensure past mistakes will not be repeated.

Coast Guard is making the changes necessary to propel the program to ultimate success and provide the critical cutters, aircraft and sensors needed to meet its dynamic mission requirements. The Department, particularly the Coast Guard, is anxious for positive results.

[www.dhs.gov](http://www.dhs.gov)

Acquisition success is dependent upon the proper organizational structure and alignment within Coast Guard's acquisition community with the stand up of its new Acquisition Directorate (CG-9).

The initial operation of this new directorate will begin officially on July 13, 2007. As part of this consolidation, the Acquisition Directorate, the Deepwater Program Office, the Office of Procurement Management, the Office of Research, Development, and Technical Management, the Research and Development Center, and the Head Contracting Authority are being brought together under one roof, led by an Assistant Commandant for Acquisition. This means that Coast Guard will be better able to allocate its contracting and acquisition professionals and resources to focus on excellence in program management and execution. Coast Guard expects this change to create efficiencies and more consistent and coherent processes, leading ultimately to a more effective acquisition organization. However, despite efficiency gains, Coast Guard officials are addressing personnel shortfalls in several areas and/or building further into governmental partnerships to reach full directorate capability.

Coast Guard senior officials also redefined the role of the Coast Guard's chief engineer (CG-4) as the lead technical authority for all designs and design changes and the operational community for definition of asset performance requirements. This means that project and program managers, as well as associated contracting and acquisition professionals, have a direct link back to Coast Guard technical and operational experts to ensure that designs meet requirements. Agency officials are also further defining the role of the Coast Guard's Chief Information Officer as the technical expert for all C4ISR systems and equipment.

In order to strengthen government management and oversight of the Deepwater program as well as to better position the Coast Guard to fully oversee the contractor and effectively adjudicate technical concerns, senior officials have mandated that all Integrated Product Teams (IPT) be chaired by an officer or employee of the Coast Guard. That change happened in March 2007. Previously, IPTs were chaired by representatives from Integrated Coast Guard Systems (ICGS). Additionally, all IPT charters have been re-examined to determine where other changes might be made if needed. Coast Guard leadership of IPTs means the agency is better able to resolve non-major technical concerns or, where concerns persist, raise them to the appropriate management and contracting levels for adjudication.

Change within Deepwater and the Coast Guard acquisition community required agency senior officials to take a hard look at workforce needs moving forward. Deepwater was initially envisioned and developed as a way to acquire needed assets while maintaining minimal government program management staff. Five years later, the Department and Coast Guard know that method didn't deliver the desired results. In order to support the Coast Guard taking on more appropriate program and contract management responsibilities, senior officials are keenly focused on building out the workforce to achieve required bench depth in such professional areas as program management, systems engineering, cost estimating, and contracting. They are dedicated to creating a certified corps of professionals with the required experience to compliment the existing dedicated contracting and acquisition staffs.

Along with the Coast Guard analysis to right-size staffing levels, officials have reinvigorated the acquisition training and certification process to ensure that all technical and support staff, program managers and contracting officers have the requisite skills and education needed to

manage complex acquisitions. Coast Guard's desired end state is to become the model for mid-sized federal agency acquisition and procurement, in full alignment with the Department of Homeland Security acquisition objectives.

Coast Guard officials are also currently negotiating to modify the Deepwater contract for the first award term. While the new award term does establish ICGS as a *possible* sole-source option, it does not *obligate* the government nor *guarantee* award of any work to ICGS. This new contract represents a significant change to the Deepwater enterprise and demonstrates the Coast Guard's commitment to robust oversight. The scope of the new award term contract is fully one-third less than the original base contract, and positions the Coast Guard with more favorable terms and conditions.

The complexity of the Deepwater program and the diverse missions of planned assets make design review a crucial element of the successful execution of this program. To ensure that designs and assets will meet Coast Guard needs, the agency has increased its use of independent, third-party review and analysis (in concert with the USCG technical authorities) for all new starts or substantial design changes. Inherent in this initiative is a renewed commitment to utilize full business case analyses for all new acquisition decisions to instill confidence that Coast Guard is building and buying the right tools for our Coast Guard men and women and at the best value for taxpayers.

Coast Guard's partnerships and cooperative relationships with the U.S. Navy and others extend beyond third party assessments. The Coast Guard is leveraging sound principles of systems engineering and integration to derive high levels of sub-system and component commonality, improve interoperability with the U.S. Navy and other agencies, and achieve significant cost avoidances and savings. This approach conforms with and directly supports the National Fleet Policy.

While acknowledging lessons learned from past mistakes, Coast Guard also needs and intends to capitalize on significant recent accomplishments. With 84 re-engined HH-65C helicopters flying, two National Security Cutters under construction, Coast Guard's first Long Range Interceptor in the water, eight CASA maritime patrol aircraft on contract, and C4ISR upgrades completed on 39 legacy cutters and three Communications and Command Centers, Deepwater is moving in the right direction as agency officials inject robust government oversight and systems integrator skills into this acquisition.

Furthermore, Deepwater assets are in the fleet today, contributing to the successful execution of an array of Coast Guard missions including:

- With a 40 percent power increase and greater reliability, the HH-65C has re-established itself as the deployable mainstay of the Coast Guard helicopter fleet and played an invaluable part during the Coast Guard's response to Hurricane Katrina. And, just last July, a hiker in the Olympic National Forest fell 6,500 feet down the side of a mountain and owes his life to a daring rescue by a well-trained Coast Guard aircrew, flying a newly delivered HH-65C helicopter—recently re-engined as part of the Deepwater program. This hoist would have been impossible to accomplish with the previous HH-65 model helicopter.

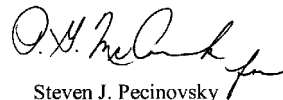
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- A training facility in Petaluma, CA has opened and houses high-tech shipboard operation simulators and state-of-the-art radar and electronics systems and will provide critical command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) training for Coast Guard and U.S. Navy crews.
- Deepwater upgrades to legacy cutters are also contributing to mission success. In March 2007, the crew of the CGC SHERMAN executed the largest drug bust in the Coast Guard's history—19.5 metric tons of cocaine from the Motor Vessel GATUN off the coast of Panama—which would not have been possible without the Deepwater installed C4ISR systems.

These operational successes just begin to illustrate the tremendous potential for Deepwater to greatly enhance the Coast Guard's ability to perform its missions. As Deepwater's system of assets continues to be delivered, Coast Guard senior officials are confident that they will meet or exceed not just capability requirements, but patrol and response capacity needs as well. The soon to be aligned acquisition organization, along with the other program management initiatives discussed here, will enable the Coast Guard to take the steps that the GAO and others have recommended.

Much work still lies ahead, but the Coast Guard is better positioned, organized and empowered to execute acquisitions effectively. Open and honest dialogue between the Department/Coast Guard and GAO is essential. Coast Guard will continue to advise you of its challenges and successes, make additional changes where needed and fully support the GAO's efforts in helping Coast Guard make Deepwater a success.

Sincerely,



Steven J. Pecinovsky  
Director  
Departmental GAO/OIG Liaison Office

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# Appendix V: GAO Contacts and Acknowledgments

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## GAO Contacts

Stephen L. Caldwell at (202) 512-9610 or by e-mail at [caldwells@gao.gov](mailto:caldwells@gao.gov); or John P. Hutton at (202) 512-7773 or by e-mail at [huttonj@gao.gov](mailto:huttonj@gao.gov).

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# Related GAO Products

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*Coast Guard: Status of Efforts to Improve Deepwater Program Management and Address Operational Challenges*, [GAO-07-575T](#) (Washington, D.C.: Mar. 8, 2007).

*Coast Guard: Preliminary Observations on Deepwater Program Assets and Management Challenges*, [GAO-07-446T](#) (Washington, D.C.: Feb. 15, 2007).

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